ARCHITECTURAL AND ENGINEERING SPECIFICATIONS
Section 282310 – Digital Video Recorders and Analog Recording Devices

ZR-DH921NP
Triplex, Network able, Digital Video Recorder

PART 2 – PRODUCTS

2.01 MANUFACTURER

A. CBC (AMERICA) Corp.
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B. This product shall be manufactured by a firm whose quality system is in compliance with the ISO 9001, QUALITY SYSTEM.

2.02 Description

A. The Digital Video Recorder described shall be a GANZ Model number ZR-DH921NP or equivalent. The unit shall be a compact, versatile and very powerful 9ch Triplex DVR. It shall operate like a conventional multiplexer and VCR with local display monitors for live and playback viewing in multi-screen mode while the system continues to record new images. It shall have a large storage capacity, supporting 4 internal hard disk drive (HDD) for up to 1TB and up to 20 external storage devices (CD-R/W and HDD) via Fire Wire and Data backup and portability that is supported by the use of removable media. It shall be capable of multiplexing multiple cameras utilizing Wavelet compression algorithm to store images on internal HDD for fast search and retrieval either locally at the extra space, or delete remotely over a TCP/IP network.

B. Additionally, the unit shall be designed to work within a variety of system configurations, and should fit easily into existing CCTV infrastructure. It shall be capable of operating nearly any PTZ device through the built-in RS422/485 telemetry control. It shall have integrated motion detection, analog alarm inputs and outputs, pre- and post alarm recording buffers, and e-mail notification of alarm events. Its networking features shall include PTZ control, live viewing, event log search, and multi-channel playback. It shall have advanced management and scheduling features, automatic daylight saving time adjustment, and support for continuous time correction via Simple Network Time Protocol (SNTP). It shall have multi-levels of password protection and selectable covert channel recording.

2.03 Unit Specifications

A. The ZR-DH921NP shall include, but not be limited to the following:

1. The ZR-DH921NP shall function as a standalone unit. It shall not require the use of a personal computer, special monitors, or other peripheral devices for either programming or operation. Live and recorded playback of video images shall display on conventional CCTV monitors.
2. The ZR-DH921NP shall utilize Embedded Linux real time operating system for increased reliability.
3. The ZR-DH921NP shall be capable of displaying on-screen text and menus in more than seven languages. Language shall be user selectable via the menu system.
4. The ZR-DH921NP shall have key buttons and a jog/shuttle integrated into the front panel of the unit, used for menu navigation, setup, and control of the unit, with no need for an external control device.
5. The ZR-DH921NP shall use an easy-to-read, on-screen menu system of pull-down and pop-up selections.
6. The ZR-DH921NP shall use a battery to back up memory that stores date and time.
7. The ZR-DH921NP shall support Auto Install to do the following:
    a. Automatically terminate camera inputs
    b. Automatically detect installed cameras
    c. Automatically detect loss of video signal.
8. The ZR-DH921NP shall prevent unauthorized program tampering through the use of multiple password levels.
9. The ZR-DH921NP shall be two units of rack space in height (2U) and capable of being rack mounted (EIA 19-inch standard), with rack mount hardware that was designed by the manufacturer to support the units.
10. The ZR-DH921NP shall be provided with a UL listed low voltage, AC to DC isolated power supply to prevent susceptibility to power spikes, surges, harmonics, and other common electrical disturbance phenomena associated with the installation environment.

B. The ZR-DH921NP shall have the following operational features:

1. Recording
    a. The ZR-DH921NP shall record video on a hard disk drive. No videotape or videotape recorders shall be required.
        1) The ZR-DH921NP shall support both internal and external multiple hard disk configurations.
        2) Internal disk capacities shall be 250GB,500GB,750GB or 1TB.
        3) The ZR-DH921NP shall provide for 3 recording areas on the hard drives; normal/alarm recording, event/alarm partition, and backup.
    b. The ZR-DH921NP shall support Manual, Schedule, and Specific time recording.

c. The ZR-DH921NP shall have the ability to copy the setting of one channel to others and that of one day to other days.

d. The ZR-DH921NP shall support user programmable picture capture rates that can be programmed on a per-camera, per hour basis. All cameras shall be programmable to capture images in one of the following operating modes:

   1) Continuous (C)
   2) Alarm (A)
   3) Motion (M)
   4) Continuous + Alarm (CA)
   5) Continuous + Motion (CM)
   6) Alarm + Motion (AM)
   7) Continuous + Alarm + Motion (CAM)

e. At a minimum, the ZR-DH921NP shall support the following image capture rates (NTSC system) :

   1) 120 ips
   2) 60 ips
   3) 30 ips
   4) 15 ips
   5) 7 ips
   6) 4 ips
   7) 1 ips
   8) 0.016 ips

f. The ZR-DH921NP shall support an alarm record mode that is user programmable. At a minimum, it shall support the following alarm mode image capture rates (NTSC system):

   1) 120 ips
   2) 60 ips
   3) 30 ips
   4) 15 ips
   5) 7 ips
   6) 4 ips
   7) 1 ips
   8) 0.016 ips

g. The ZR-DH921NP shall allow the user to select whether the hard disk recording should automatically overwrite data (starting with the oldest data first) .

h. The ZR-DH921NP shall have image quality settings, that are adjustable on a per camera basis by the end user, including the following:

1) Q7 18KB (2CIF), 11KB(CIF)
2) Q6 17KB(2CIF), 10KB (CIF)
3) Q5 15KB(2CIF), 9KB (CIF)
4) Q4 13KB(2CIF), 8KB (CIF)
5) Q3 10KB(2CIF), 6KB (CIF)
6) Q2 7KB(2CIF), 5KB (CIF)
7) Q1 5KB(2CIF), 3KB (CIF)

i. The ZR-DH921NP shall support an image equal to or greater than that of a time-lapse video recorder set at the lowest setting, while maintaining all other performance criteria described in this document.

j. The ZR-DH921NP shall support from zero to twenty seconds of pre-alarm/motion recording, maintained in a buffer, and shall append this buffer to the beginning of all recorded alarms. The ZR-DH921NP shall continue to record at the alarm rate until the alarm is timed out or reset manually by the user.

k. The ZR-DH921NP shall support pre and post alarm/motion recording, maintained in a buffer, and shall delete append this buffer to the beginning of all recorded events. The ZR-DH921NP shall continue to record at the event rate until the programmed event duration (from zero to ninety nine seconds) expires.

l. The ZR-DH921NP shall allow the user to manually or automatically customize the record rates per camera for alarm/motion detection.

m. The user shall be able to play back images smoothly at normal or fast speeds and in forward or reverse modes, without distortion.

n. The unit shall provide full media search capabilities for archiving, restoring, and playback operations. Search capabilities shall include filters for start time/dates, alarm and event occurrences, back-up images.

o. The unit shall use Wavelet technology to compress and store pictures prior to recording.

p. The ZR-DH921NP shall support the recording of all images with a digital watermark. The verification of watermarked images shall be done by client software.

q. The ZR-DH921NP shall record and playback one audio channel.

2. Archiving

a. The ZR-DH921NP shall support archiving of recorded images through USB or IEEE 1394 Fire Wire port to CD-RW,HDD drives. The ZR-DH921NP shall be accessible over a 10/100Mbps network using the remote client software.

b. The ZR-DH921NP shall support the use of external recordable CD drives or removable memory device through a USB interface for selective archiving of images.

c. The ZR-DH921NP shall automatically detect the type of archiving device connected, when interfaced to the devices specified herein or approved equals.

d. The ZR-DH921NP shall have an on-screen progress indicator when selective archiving is accessing the archive device.

3. Multiplexing

a. The ZR-DH921NP shall be a triplex type unit, allowing simultaneous recording, playback, and live multi-screen viewing at the unit, with no need for additional hardware.

b. The ZR-DH921NP shall provide the following displays in live mode: full screen, sequencing, picture-in-picture, 4-way, 7-way, 8-way, or 9-way.

c. The ZR-DH921NP shall provide the following Triplex displays in playback mode: full screen, sequencing, picture-in-picture, 4-way, 7-way, 8-way, or 9-way .

d. The ZR-DH921NP shall allow the user to rearrange cameras in user multi-screen display in live view.

e. The ZR-DH921NP shall provide one-touch electronic zooming with on-screen indicators. All areas of zoomed images shall be capable of being viewed through the use of digital pan and tilt functions.

f. The ZR-DH921NP shall have a covert camera feature, which removes the selected camera from live, spot, and remote view display but allows it to be recorded and viewed during playback by an authorized user.

g. The ZR-DH921NP shall incorporate the following display options:

1) Camera titling with a maximum of 16 alphanumeric characters

2) Time/date formatting

4. Video motion detection

a. The ZR-DH921NP shall support the following type of user-selectable video motion detection, with onscreen indications when motion is occurring:

1) Intrusion detection, which shall be programmable by the user to be treated as an alarm.

a) The ZR-DH921NP shall support an onscreen setup scale to determine the optimum sensitivity setting for each camera input.

b) The ZR-DH921NP shall have 196 zones per camera, arranged in a 14 by 14 grid.

c) The ZR-DH921NP shall have 30 levels of sensitivity.

5. Alarms

a. The ZR-DH921NP shall support up to 9 alarm inputs (one per camera), programmable as normally open.

b. The ZR-DH921NP shall support four relays as alarm outputs, each programmable as normally open or normally closed from within the menus, and rated for up to 1.0 A continuous. Upon numerous events including motion detection, full disk, signal loss, power off, and network access, the system shall be able to execute a change of state (COS) to relay number 1, 2,3, or 4.

c. The ZR-DH921NP shall have a fully programmable additional audible device to alert the user to alarms, intrusion detection, video loss, and hardware components fail such as fan, HDD, network, internal memory.

d. The ZR-DH921NP shall support alarm latching with two settings, which shall be programmable from the menus as follows:

   1) Manual – the alarm must be reset by an operator, such as for a high priority alarm like a panic alarm or hold-up button.

   2) Auto – the alarm shall automatically reset after a user-defined elapsed time.

e. The ZR-DH921NP shall provide status relays that shall link to alarms, motion detection, and video loss.

f. The ZR-DH921NP shall have an alarm history display capable of showing by the system.

g. The ZR-DH921NP shall be supplied with screw-terminal connections to facilitate easy connection of alarms and other input/output signals.

h. The ZR-DH921NP shall support email notification on alarm to email user accounts. The ZR-DH921NP shall allow the user to program email notification in response to any of the following conditions:

   1) Alarm On
   2) Motion Detect
   3) Disk Full
   4) Admin. PW Changed
   5) Video Loss
   6) Menu Modified
   7) Power On/Off
   8) No Event

6. RS-485/422communications and networking

   a. The ZR-DH921NP shall provide both RS-485 and RS-422 bus and shall support RS-485/422 control to PTZ domes

   b. The ZR-DH921NP should control Pan, Tilt, Zoom, Focus, and Preset operation of PTZ domes.

7. Ethernet communications

a. The ZR-DH921NP shall support LAN/WAN Ethernet access.
b. The ZR-DH921NP shall support Ethernet bandwidths of 10 Mbps or 100 Mbps.
c. The ZR-DH921NP shall have built-in web server .
d. The ZR-DH921NP shall support simultaneous Ethernet access by less than 8 work stations connected to the LAN/WAN.
e. The ZR-DH921NP shall support Static IP address. Default web server port shall be 80 but shall be user assignable (from 80-19999).
f. The ZR-DH921NP should support for continuous time correction via Network Time Protocol (NTP).
g. The ZR-DH921NP shall not stop recording during any Ethernet access, nor shall it be possible to remotely issue a command via Ethernet to stop the recording.
h. The ZR-DH921NP shall allow the user full programming of Ethernet parameters, including the following:
    1) DHCP (enable/disable)
    2) IP address
    3) Default gateway
    4) Sub-net mask
    5) Primary Name Server
    6) Backup Name Server
    7) HTTP port (80-19999)

C. The ZR-DH921NP shall have the following additional specifications:
1. Video
    a. Horizontal resolution shall be 720 or 360 pixels.
    b. Vertical resolution shall be 240 pixels.
    c. Inputs
        1) Camera
            a) There shall be 9 looping camera inputs.
            b) Inputs shall use BNC connectors.
            c) Inputs shall be NTSC/EIA or PAL/CCIR compatible, depending on the model selected.
    d. Outputs
        1) The ZR-DH921NP shall have three monitor outputs as follows:
            a) One digital multi-screen monitor output
                i) Composite video, BNC connector
                ii) NTSC/EIA or PAL/CCIR compatible

iii) Shall display live, playback, and programming functions

b) One multi-screen monitor output
   i) Composite video, BNC connector
   ii) NTSC/EIA or PAL/CCIR compatible
   iii) Shall display live video

c) S-Video output

2. The ZR-DH921NP shall support for transparency of on-screen status or menu.
3. The ZR-DH921No shall support for firmware management and new firmware can be updated via a USB memory device or network, direct Internet connection.
4. The ZR-DH921NP shall support for configuration management, and all set up definitions such as set up of camera, recording, alarm, audio, system, screen, web password shall be copied and restored.
5. The ZR-DH921NP shall support for automatic time synchronization, time zone setting, and daylight saving.
6. The ZR-DH921NP shall support for front panel button lock to secure the unit.
7. The ZR-DH921NP shall have input/output connector to support the following functionality:
   a. Alarm inputs
   b. Relay outputs
8. Electrical
   a. Input voltage: 115 VAC(60Hz) or 230VAC(50Hz) selectable by main power switch.
   b. Power: 50 W nominal
9. Environmental
   a. Operating temperature range: 32 to 104°F (0 to 40°C)
   b. Relative humidity: 80% non-condensing
10. Mechanical
    a. Dimensions shall be 432 x 88 x 450 mm.(W x H x D)
    b. Weight shall be 10 kg.
11. Accessories
    a. Rack Mount Brackets
    b. RS-485/422 Terminal Block
    c. Alarm In/Out Terminal Block
    d. Power Code
    e. RJ-11 Cable and Terminal Block
    f. CD-RM
    g. USB Thumbnail memory (optional)

D. The ZR-DH921NP shall conform to these internationally recognized compliance standards:
   1. FCC
   2. CE
   3. UL

2.04 Client Software

The Client software shall include, but not be limited to the following ;

1. Client software shall support the Windows 98,ME,2000, XP operating system.
2. Client software shall display up to 64 multi screens in live view and 16 multi screen in playback view and backup images.
3. Client software shall compose multi screen by dragging images from the designated site.
4. Client software shall search the events such as alarm or motion detection and indicate events automatically in real time.
5. Client software shall play back download image and backup image of HDD,CD-RW, or USB memory connected to ZR-DH921NP.
6. Client software shall convert download image data (Wavelet file) to JPEG, or AVI file.
7. Client software shall print out captured images and store them as JPEG files.
8. Client software shall operate PTZ domes.
9. Client software shall make watermarked file and support for watermark verification for evidence purpose.
10. Client software shall support remote configuration setup, including the following;
    a. Audio Setup ; Gain, Bypass, Associated video channel, sampling rate
    b. Alarm Setup ; Pre and Post Alarm, Motion Detection, Alarm name, Alarm output.
    c. Camera Setup ; Title, Brightness, Contrast, Saturation, Hue
    d. Covert Channel ; Live/Playback/Remote view
    e. Display Setup ; Screen, Sequence, Spot monitor, Transparency of OSD menu/status.
    f. Hard Disk Drive Management
    g. E-mail notification ; e-mail address and port number, period, related event such as Alarm on, Motion detect, Disk full, Admin. Password Change, Video loss, Menu Modified, Power On/Off, No event.
    h. Recording Setup
    i. System Information
    j. Telemetry Control ; Unit address and baud rate